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Rudolf William Glaser, 1888–1947

On September 4, 1947, at Princeton, N. J., Dr. R. W. Glaser, an associate member of the Rockefeller Institute for Medical Research in the Department of Animal and Plant Pathology for 27 years, died suddenly from a heart attack. Dr. Glaser was born at Catonsville, Maryland in 1888. While a student at the University of Michigan he was employed during the summers of 1909 and 1910 as assistant biologist by the Maryland Shell-Fish Commission. After receiving his A.B. degree from the University of Michigan in 1911, he was assistant entomologist at Harvard from 1911 to 1913 and entomologist of the Bureau of Entomology, U. S. Department of Agriculture, from 1912 to 1920. In 1914 he received his Sc.D. degree from Harvard University and in 1920 he joined the Rockefeller Institute.

His studies dealt with such subjects as the wilt disease of the gipsy moth and other insects, bacterial diseases of caterpillars, the nature of polyhedral bodies found in insects, growth of insect blood cells in vitro, intracellular bacteria, the effect of food on the longevity and reproduction of flies, the cultivation of bacteriocytes in the German roach, methods for the sterile culture of houseflies, the culture of *Neoaplectana glaseri*, a nematode parasite of the Japanese beetle, biochemical studies on the virus and the inclusive bodies of silkworm jaundice, etc., etc. His early papers appeared in Psyche, Journal of Economic Entomology, and Biological Bulletin and his later ones in the Journal of Experimental Zoology, Journal of Experimental Medicine, Journal of Parasitology, Journal of Agricultural Research, Journal of Immunology, etc. Some of his work on *Neoaplectana glaseri* was published by the New Jersey

Department of Agriculture, and in the Journal of the New York Entomological Society. In Edward A. Steinhaus' recent book on "Insect Microbiology" (1946), a partial bibliography of Dr. Glaser's titles includes 25 from 1918 to 1943. Additional titles may be found in "Insect Dietary" (1946) by Charles T. Brues, and in "Entomology with Special Reference to its Ecological Aspects" by J. W. Folsom, revised by R. A. Wardle in 1934.

The nematode parasite of the Japanese beetle was discovered in New Jersey during May, 1929 while Dr. Glaser and Dr. Henry Fox were investigating the mortality of grubs. Later Dr. Gotthold Steiner described the nematode as a new genus and species. Because of the possibilities for beetle control in this parasite Dr. Glaser was employed as a consultant by the New Jersey Department of Agriculture on September 1, 1930 and by 1931 he had succeeded in cultivating the nematode on an artificial medium. For the next few years Dr. Glaser planned and directed experimental field introductions. This early work that was conducted at and from the Instiute opened up a new field of insect control and led to the establishment at White Horse, N. J., in the spring of 1934, of a parasite laboratory by the New Jersey Department of Agriculture. This laboratory cultured the nematodes on a large scale and made introductions in various parts of the state. When the nematode introductions were finished work was started with other insect parasites, and Dr. Glaser was retained as consultant until his death.

Dr. Glaser was a member of the American Society of Parasitologists, the Washington Academy, the Cambridge Entomological Club, the Michigan Chapter of Sigma Xi, and a fellow of the Entomological Society of America and the American Association for the Advancement of Science. Interment was at Baltimore, Maryland.

Dr. Glaser was a careful, well-informed, active investigator, and an agreeable, intellectual companion whose opinions, judgment, and research work always merited the respect and consideration of his co-workers.

H. B. Weiss

Termite-Eating Pheidole Larvae (Hymenoptera: Formicidae)

By NEAL A. WEBER, Swarthmore College, Swarthmore, Pennsylvania

The greatest enemies of termites are often said to be ants and among the common ants within the geographical range of termites are those belonging to the genus Pheidole. While most of the species are carnivorous, feeding largely on insects, others are granivorous and store seeds. The maxima worker has an exceptionally large head and is referred to as a soldier caste.

The larvae of most ants are fed by regurgitation of liquid food from the workers. Among the primitive ants of the subfamily Ponerinae, however, it is not uncommon for the workers to bring parts of insects to the larvae and permit the latter to feed directly on them. The habit is rare among the Myrmicinae (to which Pheidole belongs), Dolichoderinae and Formicinae, subfamilies containing most of the species of ants and by far the most individuals. Wheeler records it in two other myrmicines and in one formicine (1933). It has not apparently been hitherto recorded in nature in the cosmopolitan genus Pheidole.

The nature of larval food is of particular interest in view of the reports by Goetsch (1937, 1947) that the development of the soldier caste depends upon the larvae being fed insect food at a particular time. He has extracted his vitamin "T", supposed to be an essential factor, from termites among other insects. The species of Pheidole are particularly noteworthy in possessing a soldier caste well differentiated from the ordinary worker.

It is accordingly of interest to note the finding in nature of an African species of Pheidole whose larvae were fed fragments of termites. The regularity of associations between these two is further attested by the additional records in which the nature of the larval food could not be determined. Neither Arnold (1915–1926) nor Wheeler (1922) in their monographs

on African ants records insect-eating Pheidole larvae nor, indeed, any larval food habits. The African records are from my 1939 expedition to Central Africa and the others are from personal collecting in the Neotropical Region. I am indebted to Professor A. E. Emerson for identifying the termites.

On the great plains surrounding Nairobi, Kenya, several degrees south of the Equator, one of the commonest trees is an Acacia (?*A. stenocarpa* Hochst of Allaud and Jeannel) with conspicuous hollow swellings at the bases of the long thorns. These have often been referred to as ant-galls from the circumstance that they are regularly inhabited by ants but the evidence appears to be that they develop independently of these insects. In the "galls" are found lycaenid and other lepidopterous larvae, dipterous larvae and scale insects which may be tended by the ants. The common ants appear to be *Crematogaster vulcania* Santschi and Pheidole of several species. The Crematogaster are regular inhabitants of the Acacia "galls" while the Pheidole nest under rocks in soil nearby and forage over the Acacia. The Crematogaster have their brood and myrmecophiles in the "galls"; only soldier and worker Pheidole were found in these and they foraged over the Crematogaster-inhabited "galls." In the soil are termites (? Macrotermes sp.) and they doubtless feed on Acacia dead wood as well.

Under a small rock four feet from an Acacia a *Pheidole punctulata* Mayr colony had its brood. To the lower surface of the rock the ant larvae were attached by their long dorsal hairs. Many of the larvae were holding pieces of termites, sufficiently held that they stayed on the larvae when the rock carrying them was roughly overturned. In the vial of alcohol in which all were placed the fragments did not remain with the larvae but it was first determined that they were held on the ventral surface next to the mouthparts. I asked my companion, Dr. G. van Someren, to corroborate my finding under a 10 and 20 × hand lens which he kindly did. Later study showed that the larvae were held to the rock by a few long dorsal hairs, each terminating in a pair of hooks. The hairs grew directly from the body at right angles, then made a complete, irregular loop before proceeding by several irregular curves to their bifurcated

apices. In addition there were much shorter and finer dorsal hairs, also bifurcated apically. The termite fragments were held in place by the bent head against the body, assisted by a few simple hairs on the ventral surface.

In the vicinity of *Pheidole punctulata* and near the Acacia was a colony of *Pheidole sculpturata* Mayr, subspecies, or a closely related species. This species is much larger in the solder caste. The ants had stored small brown seeds in chambers in the soil under an irregular crater. The workers also foraged over the Acacia.

Pheidole punctulata Mayr is sometimes considered a distinct species, sometimes a subspecies of the cosmopolitan *megacephala* of Fabricius. They are at the least closely related species and both are common African ants. Wheeler (1922, p. 132) quotes Lang's notes on the native Belgian Congo name, "Tuegeke," and nesting "in mushroom-shaped termitaria in swamps" and "in the tops of termite mounds" as well as "under heaps of decomposed, moist grass." Arnold (1915–26, p. 424) speaks of it as being "very partial to sugar and other provisions and is therefore a frequent pest in houses. It nests in the ground, and often under the shelter of stones and decayed logs, also occasionally in hollow trunks of trees. Usually many fertile queens are found in each nest." The Nairobi specimens are much darker and somewhat larger than Belgian Congo and Uganda specimens identified by the above authorities but well within the range given by Arnold. My Imatong Mountains Pheidole listed as *P. megacephala* subsp. 1384 (1943, p. 305) consisted of two colonies nesting a distance of 46 cm. apart. The colony noted as being "distinctly smaller in both worker and soldier castes" appears close to the species *P. megacephala* while the larger form taken nearby agrees fairly well with *P. punctulata* except that it is much smaller than the Nairobi form. The ants of both colonies mingled together in capturing live termites (*Ceratotermes rhinoceros* (Sjöstedt)). Both *P. punctulata* and *P. megacephala* are highly variable species in Africa and considerable work would be necessary before their relationships to one another and to the numerous described forms of them could be satisfactorily determined.

Since both termites and Pheidole ants are common insects of the tropics it is to be expected that they would often be found nesting in the vicinity of one another. This is substantiated by the following sample records which demonstrate also the opportunity the ants have to prey upon the more helpless insects.

At Er Renk on the White Nile River, Anglo-Egyptian Sudan, a colony of a subspecies of *Pheidole megacephala* occupied runways interdigitating with those of *Microtermes thoracalis* Sjöstedt under a rock in dark, wet soil on the river bank. When I lifted the rock the ants attacked the termites and carried off a number. The soldier termites were not seen to defend the colony. A similar association was seen about 40 feet away although the chambers of the insects were not so close to one another.

Upstream at Shambe on the west bank of the White Nile, here called the Bahr-el-Jebel, large earth mounds of *Macrotermes natalensis* (Haviland) were numerous. *Pheidole megacephala* nested in peripheral chambers of one nest about six and one half feet high. Alates of the termites were taken close to the surface at a height of five feet. The termite mound was surrounded either by shallow water or by very wet soil since the region had had two days of rain. It was a swampy region in any event and the Pheidole must have been largely confined to the vicinity of the mound. Piles of sand grains from their excavatings were noted on the slopes at all heights. Workers of the same ant species foraged in the nearby native village. The termite mound was in addition the site for a nest of *Camponotus* (*Orthonotomyrmex*) *sericeus* Fabr. whose workers were much larger than those of the Pheidole. They seized termites when chambers of both were exposed and attacked me as well.

In the same Imatong Mountains of the Sudan above noted, another form of *Pheidole megacephala* also close to *punctulata* was taken nesting under a rock with termite runways nearby. The Pheidole brood was again clinging to the under side of the rock ($30 \times 30 \times 20$ cm., 15 cm. high). The ants seized the termites (*Anoplotermes* sp.) when the nests were exposed

but temperatures were cool at the elevation of 7,570 feet above sea level and neither insect was particularly active.

Other African observations indicated more versatility in food habits of Pheidole. A worker at Mombasa on the Indian Ocean Coast was carrying a dead worker of the common ant, *Euponera* (*Brachyponera*) *sennaarensis* Mayr. At Nairobi they were lapping nectar of the petiolar glands of *Albizzia gummifera*. At Kagelu near the Nile-Congo watershed several colonies were tending membracids and related homopterous insects on vines and trees.

Similar habits were observed in the Neotropical Region.

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A New Species of Anaides from Peru (Scarabaeidae: Coleoptera)

By MARK ROBINSON, Springfield, Pennsylvania

Anaides rugosa new species

From *fossulatus* Westwood this species differs in lacking the four more or less parallel ridges on the pronotum and in the fact that the anterior tibial teeth of *fossulatus* are more approximate. From *simplicicollis* Bates this species can be distinguished by the pronotal sculpturing which is punctured on

the disk in the older species. The mentum of *rugosa* resembles that of *simplicicollis* in being emarginate anteriorly, but in addition to the characters already mentioned the elytral ridges are higher and sharper and the anterior tibiae between the teeth are crenate.

Ovate; opaque; dark brown with the ridges and legs dark reddish.

Clypeus produced forwards, anterior edge truncate, the angles on either side well rounded. There is a longitudinal raised mound running from the frons to just within the clypeal edge. Entire surface of head rugose.

Side margins of thorax converging from hind angles to the anterior angles with little curvature, crenate. Hind margin emarginate inside the hind angles, produced to the rear, medially. Running from near the hind angle towards the disk diagonally is a low carina. Entire surface of pronotum very rugose except the low ridges.

Elytra with the usual raised costae running from the humeral umbo to the apical umbo. One-third of the distance from the suture to the humeral costa is another raised, sharp costa which is broken up into a series of tubercules in the posterior half, two-thirds of the distance from the suture to the humeral costa is a row of tubercules in the posterior half. Between each costa or row of tubercules are two rows of irregular, circular, raised lines and between these and the costa is a series of wavy, raised lines running the length of the elytra.

Anterior tibiae tridentate, crenate between the teeth and above the third tooth. Anterior edge of mentum emarginate and crenate; under surface rugose. Under surface of prosternal episternum, mesosternum, metasternum, ventral segments and femura rugose.

Length, 9.5 mm.; breadth, 5.6 mm.

Type.—♂?; Iquitos, PERU, April 1938 (J. Hocking). [In the collection of the author.]

A New Species of Canthon from Venezuela

By MARK ROBINSON, Springfield, Pennsylvania

Canthon bifurcatus new species

By the female having a forked anterior tibial spur this species agrees with *rugosus* Blanchard. This character is usually reserved for the male sex in the genus *Canthon*. Aside from the unusual tibial spur the present form is probably nearest to *diabolicus* Harold but the latter species is hairy on the dorsal side.

Ovate; black; not very shining; the surface of the head, pronotum, elytra and pygidium is finely granulate.

Clypeus broadly emarginate medially. On either side of this wide emargination is a narrow, reflexed tooth. Between these teeth and the oblique clypeal sutures the edge is broadly rounded. The genae are also well rounded.

The thorax is widest at the middle where it is produced into a rather sharp angle. On the underside the transverse carina does not quite meet the lateral margin. Between this median angle and the sharp anterior angle there is a small tooth on the lower side of the margin.

The elytral striae are very faintly indicated. The intervals have a few transverse wrinkles scattered over the surface. The pygidium is uniformly rounded.

The anterior tibia is curved on the inside; the outer edge is tridentate and crenate between the teeth and above the third tooth. The anterior tibial spur gradually widens towards the apex and the distal end is sharply, deeply and triangularly incised. The underside is even more finely granulate than the upper side. The middle and posterior femora are finely and sparsely punctured. The posterior tibia has but one spur on the distal end.

Length, 8.0 mm.; breadth, 5.3 mm.

Type.—♀; Merida, VENEZUELA. *Paratype*.—♀; Merida, VENEZUELA. Both type specimens are in the collection of the author.

New Records of Pennsylvania Caddis Flies (Trichoptera)

By KERWIN HYLAND, JR., Department of Tropical Medicine and Public Health, Tulane University, New Orleans, La.

As a senior student of zoology and entomology at The Pennsylvania State College I undertook the problem of classifying the caddis flies (Trichoptera) from Pennslyvania represented in my own collections and in those of the college. The decision to publish the findings came as a result of the discovery that numerous species collected established extension of their known ranges. However, this list comprises only a small percentage of those that occur and can be expected to occur in Pennsylvania. Two families, Hydropsychidae and Hydroptilidae, have been purposely neglected in this list because at the end of the semester additional work was required before reporting them.

The family divisions, genera, species, and distribution data are those set forth by Dr. Herbert H. Ross in his "Caddis Files, or Trichoptera of Illinois" (1944), with the exception of distribution data of a few species. Those species marked with an asterisk (*) have not been previously reported from Pennsylvania.

The collecting area at Bear Meadows, Centre County, deserves special mention. Bear Meadows is situated about twelve miles from the campus of The Pennsylvania State College in a boreal area and consists of a sphagnum bog on a plateau between two mountains. This area is known to harbor many plants and some insects peculiar to Pennsylvania. Consequently, one may expect to find here caddis flies of special interest. Numerous species not heretofore recorded for Pennsylvania have been collected here, as *Banksiola dossuaria* (Say), *Platycentropus radiatus* (Say), *Pycnopsyche antica* (Walker), *Molanna tryphena* Betten, *Athripsodes dilutus* (Hagen), and *Goera calcarata* Banks.

Most of the specimens were collected by light, a few by bait and by net. The collection covers a period of years from 1939 to 1947. Two-thirds of the locality records are credited to Dr. S. W. Frost, one is by W .L. Brown, and the remainder are my own.

Following is a list of the species collected:

RHYACOPHILIDAE

**Ryacophila nigrita* Banks. Penn Roosevelt Dam, Centre Co.; June 9, 1946.

PHILOPOTAMIDAE

**Dolophilus moestus* (Banks). North Point, Indiana Co.; May 15, 1947.
Chimarra aterrima Hagen. Camp 62, Huntingdon Co.; June 21, 1941. Penn Roosevelt Dam, Centre Co.; June 9, 1946.
C. obscura (Walker). East Berlin, Adams Co.; July 20, 1946.

PSYCHOMYIIDAE

**Phylocentropus placidus* (Banks). Presque Isle, Erie Co.; July 15, 1940. Poe Paddy, Centre Co.; Aug. 16, 1940. Whipple Dam, Huntingdon Co.; July 27, 1945.
**Nyctiophylax vestitus* (Hagen). Bear Meadows, Centre Co.; June 11, 1939, June 28, 1939, July 3, 1939, July 10, 1939, July 21, 1939. Canton, Bradford Co.; July 17, 1941.

HYDROPSYCHIDAE

Macronemum zebratum (Hagen). East Berlin, Adams Co.; July 27, 1946.

PHRYGANEIDAE

**Banksiola dossuaria* (Say). Bear Meadows, Centre Co.; June 28, 1939, Aug. 13, 1946.
Ptilostomis ocellifera (Walker). Bear Meadows, Centre Co.; June 28, 1939, July 3, 1939, July 29, 1939, Aug. 21, 1940.

LIMNEPHILIDAE

**Platycentropus radiatus* (Say). Bear Meadows, Centre Co.; July 21, 1939, July 29, 1939, Aug. 12, 1939.
**Pycnopsyche antica* (Walker). Bear Meadows, Centre Co.; Sept. 2, 1939.
**P. guttifer* (Walker). Whipple Dam, Huntingdon Co.; Sept. 16, 1945.
**Caborius punctatissimus* (Walker). Greenwood Furnace, Huntingdon Co.; Sept. 3, 1945.

MOLANNIDAE

**Molanna tryphena* Betten. Bear Meadows, Centre Co.; June 3, 1939, June 28, 1939, July 21, 1939, Aug. 12, 1939, Sept. 2, 1939.

ODONTOCERIDAE

**Psilotreta frontalis* Banks. Liberty, Tioga Co.; May 29, 1939.

LEPTOCERIDAE

Anthripsodes flavus (Banks). Jersey Shore, Lycoming Co.; July 16, 1941. Charter Oak, Huntingdon Co.; Aug. 14, 1946.
**A. dilutus* (Hagen). Bear Meadows, Centre Co.; July 3, 1939.
A. transversus (Hagen). Charter Oak, Huntingdon Co.; Aug. 14, 1946.
A. cancellatus (Betten). East Berlin, Adams Co.; July 27, 1946.
Oecetis inconspicua (Walker). Camp 62, Huntingdon Co.; Aug. 4, 1940. Bear Meadows, Centre Co.; July 29, 1939, Aug. 12, 1939, Sept. 2, 1939. Spring Creek, Centre Co.; Aug. 12, 1939. Stone Creek, Huntingdon Co.; Aug. 14, 1939. Jersey Shore, Lycoming Co.; July 16, 1941. Presque Isle, Erie Co.; June 27, 1942. East Berlin, Adams Co.; July 27, 1946. Charter Oak, Huntingdon Co.; Aug. 14, 1946.
Oecetis avara (Banks). Charter Oak, Huntingdon Co.; Aug. 14, 1946. East Berlin, Adams Co.; July 27, 1946.
O. cinerascens (Hagen). Presque Isle, Erie Co.; June 27, 1942.
**O. osteni* Milne. Presque Isle, Erie Co.; June 27, 1942.
Triaenodes trada Milne. Presque Isle, Erie Co.; June 27, 1942.
**T. baris* Ross? Stone Creek, Huntingdon Co.; Aug. 14, 1939.
Mystacides sepulchralis (Walker). Poe Paddy, Centre Co.; June 10, 1944. Stone Creek, Huntingdon Co.; Aug. 14, 1943.
**Setodes incerta* (Walker). Charter Oak, Huntingdon Co.; Aug. 14, 1946.

GOERIDAE

**Goera calcarata* Banks. Bear Meadows, Centre Co.; June 11, 1939.

HELICOPSYCHIDAE

Helicopsyche borealis (Hagen). Charter Oak, Huntingdon Co.; Aug. 14, 1946.

A Minute on Chyphotes Blake, 1886 (Hymenoptera: Mutillidae)

By V. S. L. Pate, Cornell University, Ithaca, N. Y.

Blake proposed the generic name *Chyphotes* in 1886 (Trans. Amer. Ent. Soc., XIII, p. 276) for his peculiar new species *elevatus* from the southwestern states. In 1835, however, Burmeister used the same name—*Cyphotes*—for a genus of Neotropical Membracidae (Handbuch Ent., II, 1, p. 143). According to the present rules of zoological nomenclature, Blake's *Chyphotes* is a homonym of *Cyphotes* Burmeister since both have the same etymology (κυφότης). Consequently, for *Chyphotes* Blake, 1886 nec *Cyphotes* Burmeister, 1835, I propose here the new generic name *Blaketa* with *Chyphotes elevatus* Blake, 1886, as type.

Utah Buprestidae

By G. F. Knowlton and S. L. Wood, Utah State Agricultural College, Logan

The writers are indebted to J. N. Knull and W. S. Fisher for identification of the material here reported. Unless otherwise specifically indicated, collections were made in Utah. The collector's names are given for the less frequently recorded species.

Acmaeodera bowditchi Fall. Zion National Park, May 10, 1940 (W. P. Nye).

A. inyoensis Edz. Logan Canyon, June 16, 1940 (Nye).

A. liberta Fall. Logan Card Canyon, July 24, 1939 (G. F. Knowlton-Nye); Oak Creek Canyon, July 24, 1939 (G. S. Stains).

A. sparsa Horn. Logan, August 21, 1943; Bountiful, August 10, 1941; Mt. Nebo, August 14, 1943; Mt. Timpanogos, August 26, 1943.

A. vandykei Fall. Smithfield, July 18, 1937 (Nye); Logan Canyon, July 17, 1938 (D. E. Hardy).

A. variegata Lec. Logan Canyon, June 26, 1938; Logan Card Canyon, July 9, 1939; Emigration Canyon, May 26, 1940; Ogden, August 1, 1940; Kanosh Canyon, May 24, 1939; Provo Canyon, June 25, 1939; Mt. Nebo, July 12, 1942; Salt Lake City, September 14, 1940; Uinta, May 20, 1939.

Agrilus anxius Gory. Logan Canyon, July 3, 1938 (Hardy).

A. politus (Say). Altonah, June 19, 1940; Delta, July 5, 1938; Fairview, August 10, 1942; Heber, May 29, 1941; Kanab, August 9, 1942; Oak Creek, July 7, 1942; Riverton, June 1939; Vernon, July 18, 1943.

A. pulchellus Bland. Leeds, May 5, 1939 (Knowlton-Harmston).

A. walsinghami Cr. Logan Canyon, August 24, 1938 (Nye).

Anthaxia aeneogaster Cast. Logan Canyon, June 9, 1938; Logan Card Canyon, July 27, 1938; Altonah, June 19, 1940; Provo Canyon, June 23, 1939; Springdale, May 11, 1940; South Fork of Ogden Canyon, July 3, 1941.

A. pseudotsugae Chamb. Logan Card Canyon, July 9, 1939 (Knowlton-Nye); Beaver, July 10, 1939 (Knowlton-Harmston).

A. viridifrons Gory. Logan Canyon, June 9, 1938 (Knowlton-Nye).

Buprestis aurulenta L. Logan, July 4, 1941 (H. F. Thornley); Roosevelt, August 14, 1936 (Harmston); Salt Lake City, August 16, 1936 (Harmston).

B. confluenta Say. Vernal, June 15, 1941 (B. A. Haws); Wellsville, April 15, 1940 (Maughan).

B. langi (Mann.). Logan Canyon, July 24, 1940; Logan, August 17, 1941; Myton, September 10, 1939; Ogden, August 19, 1941.

B. maculativentris var. *rusticorum* (Kby.). Logan Canyon, July 28, 1940 (Nye); Bountiful, September 12, 1941 (Ashdown).

B. nuttalli (Kby.). Logan Canyon, June 18, 1939 (Knowlton).

Chalcophora angulicollis (Lec.). Neola, July 10, 1935 (Harmston).

Chrysobothris caurina Horn. Logan Canyon, June 20, 1935 (Nye).

C. femorata (Oliv.). Logan Canyon, June 20, 1935 (Nye); Ogden, July 11, 1941 (Maddock).

C. mali Horn. Logan Canyon, June 20, 1934 (T. O. Thatcher).

C. pseudotsugae Van D. Logan Canyon, June 20, 1935 (Nye).

C. serripes Schffr. Salt Lake County, August 16, 1935 (W. W. Henderson).

Dicerca divaricata (Say). Provo, June 14, 1939 (Knowlton-Nye).

D. hesperoborealis H. & B. Logan Canyon, June 4, 1941 (R. S. Roberts-E. R. Simmons).

D. pectorosa Lec. Logan Canyon, June 27, 1937 (Nye).

D. prolongata Lec. Logan Canyon, July 3, 1938 (Hardy).

D. tenebrica (Kby.). Logan, October 17, 1942; Ioka, June 26, 1939; Mt. Timpanogos, July 12, 1941; Ogden, August 1, 1941; Salt Lake City, September 23, 1942; Spanish Fork, June 11, 1941; Taylorsville, May 14, 1940.

D. tenebrosa (Kby.). Logan Canyon, June 26, 1939; Emery County, July 30, 1938; Ogden, August 14, 1940; Roosevelt, September 5, 1935; Tooele, August 20, 1937.

Hippomelas obliterata (Lec.) Grand County, July 26, 1938; Pleasant Valley, July 21, 1939; Wayne County, July 28, 1938; Myton, September 10, 1939; Vernal, July, 13, 1938.

Melanophila acuminata (De G.). Logan, September 12, 1936 (Nye).

M. atropurpurea (Say). Logan, June 25, 1940 (Nye).

M. drummondi (Kby.). Logan, May 28, 1934 (Thatcher); Logan Canyon, July 29, 1940 (Nye).

The Mayfly Genus Lachlania in Utah

By George F. Edmunds, Jr., University of Utah

On August 9, 1947, the writer collected a single female imago and several nymphs of the Mayfly genus *Lachlania* from the Green River at Hideout Canyon, Daggett County, Utah. On September 3, 1947, the writer returned and was able to rear the species and collect additional nymphs and many imagoes of both sexes. These specimens apparently represent the first record of the occurrence of this genus in the United States. With the exception of *L. saskatchewanensis* Ide which was described from a single specimen taken near Humboldt, Saskatchewan, the described species of this genus are Neotropical.

Strumigenys karawajewi, New Name for a Sumatran Ant

By WILLIAM L. BROWN, JR., Harvard University
Biological Laboratories

Strumigenys (Trichoscapa) karawajewi, new name for *Strumigenys* (*Cephaloxys*) *emeryi* Karawajew 1935: preoccupied by Mann 1922 as *Strumigenys* (*Strumigenys*) *emeryi*.

Karawajew described the ant in question as (*Cephaloxys*) in subgeneric assignment. Smith has shown (1947) that the name *Trichoscapa* must be revived for the forms with short, triangular, serially dentate or denticulate mandibles. The writer of this note is at present working on a generic and subgeneric revision of the *Dacetini* of the world in which *Trichoscapa* will be accorded generic rank and strictly limited to a few forms with strong, transverse superior mandibular borders and other distinguishing characteristics. *Cephaloxys* is shown by Smith to be preoccupied as a name, so the remaining short-mandibulate forms will have to fall into a group, more probably *groups*, with a new name or names, probably of generic rank. *Karawajewi* will at that point gain a new generic name. Mann's *emeryi* is from Central America, *karawajewi* from Sumatra. References given below.

1922. MANN, W. M. Proc. U. S. Nat'l Mus. *61* (13): 37–38, fig. 18. Worker and female of *S. emeryi* described.
1935. KARAWAJEW. Treubia *15:* 106–108, fig. 25. Female of *S.* (*C.*) *emeryi* described.
1947. SMITH, M. R. Amer. Midl. Nat. *37:* 585. *S.* (*Trichoscapa*) Emery (= *Cephaloxys*) F. Smith.

International Meetings

A preliminary program has been issued for the **VIII International Congress of Entomology** to be held at Stockholm, August 9th–14th. The first day is to be given over to the formal opening, scheduled addresses, and a general reception in the evening. General sessions and sectional meetings are planned for the other days except Wednesday which is set

aside for a trip to Uppsala and to Linné's Hammarby and a viewing of the collections of Linné and Thunberg. On Friday there will be a trip to Freskati and visits to the Imperial Museum, Forest Experiment Station and Plant Protection Station. Other features are: A gathering at Lund the day before the opening with visits to the museum and, after the close of the Congress, one day excursions to the islands of the Stockholm archipelago, a six-day journey to Lappland or, for forest entomologists, a trip to middle Sweden.

The **VII Congrès Séricicole International** will be held in Alès (Gard), June 7th to 13th. This is the first meeting in 70 years, the 6th Congress having been held in 1878, and honors the 50th anniversary of the research institute at Alès. It is planned to review in a comprehensive manner the present state of knowledge and technical developments relating to silk production and the silkworm. Under Section II, there is listed a series of commissions on the anatomy, physiology, reproduction, development, endocrinology, behavior, genetics and cytology of the silkworms and a report on other silk-producing arthropods. Another series of commissions will deal with the various diseases of the silkworm. A number of excursions have been planned and, following this congress, there will be the Congrès International de la Soie in Lyon and Paris.

Current Entomological Literature

COMPILED BY EDWIN T. MOUL AND RAYMOND Q. BLISS.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the current or preceding year unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Anon.—A list and index of the publications of the U. S. Nat. Museum (1875–1946). [U. S. Nat. Mus., Bull. 193] 1–306. **Beatty, H. A.**—The insects of St. Croix, V. I. [Jour. Agric., Univ. of Puerto Rico] 28: 114–72. **Carpenter and Hale**—The writings of I. Portschinsky on warning colours and eyespots. [68] 22: 103–13. **Dansereau, P.**—Zonation et succession sur la restinga de Rio de Janeiro—I. Halosère. [Rev. Canad. Biol.] 6: 448–84. **Hoffmann, W. E.**—Insects on human food. [65] 49: 233–37. **Mayr, E.**—Ecological factors in speciation. [100] 1: 263–88. **Newell, N. D.**—Infraspecific catagories in invertebrate paleontology. [100] 1: 163–71. **Ramos, J. A.**—The insects of Mona Island (West Indies). [Jour. Agric., Univ. Puerto Rico] 30: 1–74, ill. (*). **Wetzel, C. M.**—Emergence tables. [Pa. Angler] 17: 11.

ANATOMY, PHYSIOLOGY, MEDICAL—Albuquerque, D. de O.—Contribuicao ao conhecimento de charaduella malacophaga Lopes (Muscidae). [Rev. de Ent., Rio de Janeiro] 18: 101–12. **Balduf, W. V.**—The weights of Phymata pennsylvanica americana (Phymatid). [5] 40: 576–87.—The weights of Sinea diadema (Reduviid). *Ibid.* 588–97. **Beirne, B.**—A consideration of the cephalic structures and spiracles of the final instar larvae of the Ichneumonidae. [Trans. Soc. British Ent.] 7: 123–90, ill. **Bonet, F.**—Un notable caso tetralologico. Falta bilateral de antenas en un colembolo con consideraciones sobre las areas cephalicas de los cephalicas de los Poduromorpha. [104]: 413–18, ill. **Carson and Stalker**—Gene arrangements in natural populations of Drosophila robusta. [100] 1: 113–33.—Morphological variation in natural populations of D. robusta. *Ibid.* 237–48. **Cheng and Richards**—The temperature coefficients of DDT action in insects. [Physiol. Zool.] 21: 48–59. **Crombie and Darrah**—The chemoreceptors of the wireworm (Agriotes spp.) and the relation of activity to chemical constitution. [40] 24: 95–109. **DeMeillon and Goldberg**—Preliminary studies on the nutritional requirements of the bedbug (Cimex lectularius) and the tick Ornithodoros moubata. [40] 24: 41–63. **Dethier, V. G.**—The role of the antennae in the orientation of carrion beetles to odors. [45] 55: 285–93. **Dobzhansky, Th.**—Adaptive changes induced by natural selection in wild populations of Drosophila. [100] 1: 1–16. **Dobzhansky and Spassky**—Evolutionary changes in laboratory cultures of Drosophila pseudoobscura [100] 1: 191–216. **Eastham and Segrove**—The influence of temperature and humidity on instar length

in Calandra granaria. [40] 24: 79–94. **Edney, E. B.**—Laboratory studies on the bionomics of the rat fleas Xenopsylla braziliensis and X. cheopis. [19] 38: 389–404. **Federley, H.**—Die Konjugation der Chromosomen bei den Lepidopteren. [Soc. Sci. Fennica; Comm. Biol.] IX, 13: 1–12, ill.; Polyploidie und Non-disjunction in der Gametogenese einiger Lepidopteren. *Ibid.* 17: 1–9, ill. **Ferris, G. F.**—The contradictions of the insect head. [50] 12: 59–64. **Fish, W. A.**—Embryology of Lucilia sericata (Calliphor.). [5] 40: 677–87. **Hammon, Reeves, Cunha, Espana and Sather**—Isolation from wild bird mites (Liponyssus sylviarum) of a virus or mixture of viruses from which St. Louis and Western equine encephalitis viruses have been obtained. [80] 107: 92–93. **Hayes, W. P.**—An undescribed eversible gland in the larvae of Chlaenius (Carabidae). [43] 20: 142–45, ill. **Herskowitz, I. H.**—A new method of treating Drosophila gametes with chemicals. [100] 1: 111–12. **Hinton, H. E.**—On the reduction of functional spiracles in the aquatic larvae of the holometabola, with notes on the moulting process of spiracles. [88] 98: 449–73, ill. **Ives, P. T.**—Second chromosome inversions in wild populations of Drosophila melanogaster. [100] 1: 42–47. **Kaufmann and Gay**—The influence of x-ray and near infra-red rays on recessive lethals in Drosophila melanogaster. [67] 33: 366–72. **King, J. C.**—A comparative analysis of the chromosomes of the guarani group of Drosophila. [100] 1: 48–62.—Interspecific relationships within the guarani group of Drosophila. *Ibid.* 143–53. **Kullenberg, B.**—Über Morphologie und Funktion des Kopulationsapparats der Capsiden und Nabiden. [Zool. Bidrag, Uppsala] 24: 217–418, ill. **Lane and Neghme**—Sobre el Anopheles (Nycsorhynchus) pictipennis Philippi. [Biologica, Santiago de Chile] 4: 83–93, ill. **Leonard, J. W.**—Differences in the occurrence of nymphs of two species of burrowing mayflies in fish stomachs. [5] 40: 688–91. **Miller, R. H.**—The toxicity of the venom of tarantula (Aphonopelma), Part II. [39] 39: 57–67. **Moody, P. A.**—A simple model of 'drift' in small populations. [100] 1: 217–18. **Packard, C. E.**—Fun with the fire brat. [Turtox News] 25: 196–97. **Pardi, L.**—Dominance order in Polistes wasps. [Physiol. Zool.] 21: 1–13. **Pasquier, R.**—Semeiologie de l'intoxication de Schistocerca gregaria Forsk. par γ-hexachlorohexanone. [Bull. Semestrial l'Office Nat. Anti-Acridien, Algiers] 1946: 5–22, ill. **Ramírez L. R.**—Datos preliminares fisicos y quimicos del veneno de alacrán. [104] 4: 379–82.—Obtencion de veneno de alacrán por estimulación electrica. *Ibid.* 383–85. **Rao,**

T. R.—Visual responses of mosquitoes artificially rendered flightless. [40] 40: 64–78. **Rapp, J. L. C.**—Insect hemolymph, a review. [45] 55: 295–308. **Sawaya, M. P.**—Nymphopsis melidae, sp. n. e observações sôbre a respiração nos Pantopoda. [Zoologia, Univ. São Paulo] 12: 83–97. **Shrader, F.**—The role of the kinetochore in the chromosomal evolution of the Heteroptera and Homoptera. [100] 1: 134–42. **Slifer and Shulow**—Sporadic polyembryony in grasshopper eggs. [5] 40: 652–55. **Spencer, W. P.**—Genetic drift in a population of Drosophila immigrans. [100] 1: 103–10. **Spieth, H. T.**—Sexual behavior and isolation in Drosophila. I. The mating behavior of species of the willisoni group. [100] 1: 17–31. **Stalker and Carson**—Morphological variation in natural populations of Drosophila robusta Stur. [100] 1: 237–48, ill. **Vanderplank, F. L.**—Some observations on the hunger-cycle of the tse-tse flies Glossina swynnertoni and G. pallidipes in the field. [19] 38: 431–38. **Van Leeuwen, E. R.**—Increasing production of codling moth eggs in an oviposition chamber. [37] 40: 744–45. **Vasconcellos, A. C. eS. de.**—O "Crossingover" nos machos da Drosophila melanogaster induzido pelos raios X. [Bol. da Soc. Port. de Ciencias naturais] 13: Supp. III: 693–98. **Weiss, H. B.**—The death-feints of Idiobates castaneous and Boletotherus bifurcus (Tenebr.). [45] 55: 275–79. **Wiesmann, R.**—Untersuchungen über das physiologische Verhalten von Musca domestica verschiedener Provenienzen. [Mitteil. schweiz. Ent. Gesellschaft] 20: 484–504.

ARACHNIDA AND MYRIOPODA—Anon.—Jumping spider. [Turtox News] 25: 207, ill. **Beatty, H. A.**—The Arachnida of St. Croix, V. I. [Jour. Agric., Univ. of Puerto Rico] 28: 111–13. **Biraben, M.**—Nueva Mastophora de Tucuman. [Acta Zoologica Lilloana] 3: 327–30, ill. **Boyd, E. M.**—A new mite from the respiratory tract of the starling (Acar. Speleognath). [65] 50: 9–14. **Dethier, V. G.**—(See under Anatomy.) **Fox, I.**—Seven new mites from rats in Puerto Rico. [5] 40: 598–603. **Hammon, Reeves, Cunha, Espana and Sather**—(See under Anatomy.) **Hatch, M. H.**—The Chelifera and Isopoda of Washington and adjacent regions. [Univ. of Wash. Pub. in Biology, Seattle] 10: 159–274, ill. **Herring and Dowling**—Observations on Dolomedes albineus. [31] 30: 42. **Hoffmann, A.**—Un nuevo género de trombidido mexicano. [104] 4: 451–57. **Hoffman, R. L.**—The status of the milliped Lasiolathus virginicus, with notes on Scytonotus granulatus.

[63] 60: 139–40. **Ives, J. D.**—Breeding habits of a cave-spider, Nesticus canteri. [38] 63: 215–19. **Kennedy, C. H.**—Child labor of the termite society versus adult labor of the ant society. [81] 65: 309–24. **Mello-Leitao, C. de**—Aranas de Misiones, corrientes y entre Rios. [Rev. del Mus. de la Plata] 4: 213–302 (k*).—Escorpiões Sul-Americanos. [Arquivos do Museu Nacional, Rio de Janeiro, Brazil] 1945, 40: 1–468 (k). **Miller, R. H.**—(See under Anatomy.) **Palmgren, P.**—Über die Brutpflegeinstinkthandlungen der Wolfspinnen (Lycosidae). [Soc. Sci. Fennica; Comm. Biol.] IX, 9: 1–29, ill. **Ramírez, L. R.**—(See under Anatomy.) **Sawaya, M. P.**—(See under Anatomy.) **Wallace, H. K.**—A new wolf spider from Florida, with notes on other species. [31] 30: 33–38, ill.

SMALLER ORDERS—Ahrens, C.—The mayflies. [Pa. Angler] 17: 16. **Bailey, S. F.**—The works of J. R. Watson on Thysanoptera. [31] 30: 17–24. **Bohart, R. M.**—Strepsiptera, an insect oddity. [94] 21: 24–29, ill. **Bonet, F.**—Un nuevo género de colémbolos de Argentina. [104] 4: 405–11 (k).—(See also under Anatomy.) **Crawford, J. C.**—A new species of the genus Haplothrips subg. Hadothrips (Thysanoptera). [65] 49: 250–51. **Denning, D. G.**—New Trichoptera from Puerto Rico. [5] 40: 656–61. **Edney, E. B.**—Siphonaptera. (See under Anatomy.) **Eichler, W.**—Notulae Mallophagalogicae. XVIII. Uber einige Heptapsogastridae. [Rev. de Ent., Rio de Janeiro] 18: 167–72, ill. (*). **Fraser, F. C.**—Notes on the Selysian types of Epigomphus paludosus (Odonata). [5] 40: 672–76. **Gisin, H.**—Le groupe Entomobrya nivalis (Collembola). [Mitteil. schweiz. Ent. Gesell.] 20: 541–50, ill. **Hopkins, G. H. E.**—Stray notes on Mallophaga. [6] 14: 98–112 [1947]. **Kennedy, C. H.**—Isoptera (See under General). **Leonard, J. W.**—(See under Anatomy.) **Miles, P. M.**—An introduction to the study of Collembola. [Proc. and Trans. of S. London Ent. and Nat. Hist. Soc.] 1946–47: 85–102, ill. **Moulton, D.**—New Thysanoptera from Mexico. [104] 4: 419–21.——Thysanoptera from New Guinea, the Philippine Islands and the Malay Peninsula. [60] 23: 172–80 (*). **Needham, J. G.**—Studies on the N. Amer. species of the genus Gomphus (Odonata). [83] 73: 307–39, ill. **Packard, C. E.**—Thysanura (See under Anatomy.) **Pence, R. J.**—A photomicrographic study of a parasite of the greenhouse thrips. [Turtox News] 26: 64–65. **Tissot, A. H.**—A new cattle louse in Florida. [31] 30: 40. **Traver, J. R.**—Notes on neotropical mayflies. Part II, family Baetidae,

subfamily Leptophlebiinae. [Rev. de Ent., Rio de Janeiro] 18: 149–60, ill. (*). **Williner, G. J.**—Corrodentidos del Brasil. [Acta Zoologica Lilloana] 3: 231–34, ill.

ORTHOPTERA—Beier, M.—Neue und seltene Mantodeen aus deutschen Museen. [Ann. des naturhist. Mus., Wien] 52: 126–54, ill. (S). **Breland and Dobson**—Specificity of mantid oothecae. [5] 40: 557–75. **Gurney, A. B.**—Homonymy in Mantidae of the Canary Islands. [65] 49: 251.—A new species of Pristoceutophilus from Oregon, and remarks on certain special glands of Orthoptera (Gryllacridid: Rhaphidophorinae). [48] 37: 430–35, ill. **Leao, A.**—Vida e amores da Louva-a-Deus (Mantis religiosa). [Bol. da Soc. Port. de Cien. Nat.] 13, Supp. III: 628–36. **Liebermann, L.**—Sobre una coleccion de Acridios. [Acta Zoologica Lilloana] 3: 235–38. **Nabours, R. K.**—The grouse locusts. [43] 20: 127–41, ill. **Pasquier, R.**—(See under Anatomy.) **Pletsch, D. J.**—The alpine rock crawler, Grylloblatta campodeiformis in Montana. [Proc. Montana Acad. Sci.] 5 & 6: 17–20. **Rehn, J. A. G.**—Notes on the phasmid genus Isagoras, with the description of six new species. [62] 99: 1–19, ill.—African and Malagasy Blattidae. *Ibid.* 59–92, ill. **Roberts, H. R.**—Revision of the Mexican Melanoplini. [62] 99: 201–30, ill. (k*). **Shane, P.**—A new species of Teinophaus (Cyrtacanthacridinae) from Mexico. [109] 201: 1–3, ill. **Slifer and Shulow**—(See under Anatomy.) **Tinkham, E. R.**—New species, records and faunistic notes concerning Orthoptera in Arizona. [1] 38: 127–49 (k). **Uvarov, B. P.**—The grasshopper problem in N. Amer. [53] 160: 857–59.

HEMIPTERA—Balduf, W. V.—(See under Anatomy.) **Broadbent, L.**—An analysis of captures of Aphididae in a light-trap. [88] 98: 475–90. **Caldwell, J. S.**—A new genus and species of Psylliidae from Mexico (Homo.). [5] 40: 650–51.—New species of Oliarus Stal from s.w. United States and Mexico. [60] 23: 145–51. **Capriles, J. M.**—Three new neotropical species of the reduviid genus Ploiaria. [65] 50: 18–22. **DeMeillon and Goldberg**—(See under Anatomy.) **Freeman, P.**—A revision of the genus Dysdercus Boisduval (Pyrrhocoridae) excluding the American species. [88] 98: 373–424, ill. (k). **Hepner, L. W.**—A revision of the tribe Scaphytopini (Cicadellid) in America north of Mexico. [93] 31: 413–541. **Hungerford, H. B.**—A new species of Cymatia from Australia. [43] 20: 154–57, ill (k). **Kleine-Stettin, R.**—Neue Lyciden des äthiopischen und neotropischen Faunengebietes. [Mitteil.

Münchener Ent. Ges.] 32: 149–62, ill. **Lent and Wygodzinsky**—Notes on some assassin bugs of the genus Zelurus from the collections of the U. S. Nat. Mus. [71]: 343–49 (S*). **Mason, P. W.**—A new pear aphid. [65] 49: 252–54. **Metcalf, Z. P.**—Fulgoroidea: Fulgoridae. [Gen. Catalogue of Hemiptera] Fasc. IV, Pt. 9: 3–276, Smith College, 1947.—A new genus of Lophidae from Brazil. [65] 49: 238–40. **Richter, L.**—Membracidae Colombianae. [76] 7: 382–403, ill. **Russell, L. M.**—A classification of the whiteflies of the new tribe Trialeurodini. [Rev. de Ent., Rio de Janeiro] 18: 1–44, ill. (k*). **Schrader, F.**—(See under Anatomy.) **Squire, F. A.**—On the economic importance of the Capsidae in the Guinean Region. [Rev. de Ent., Rio de Janeiro] 18: 219–47, ill.

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DIPTERA—Alexander, C. P.—Notes on the tropical American species of Tipulidae. The primitive Eriopterini: Sigmatomera, Trentepohlia, Gnophomyia, Neognophomyia, Gonomyia and allies. [Rev. de Ent., Rio de Janeiro] 18: 65–100, ill. (*). **Albuquerque, D. de O.**—(See under Anatomy.) **Barretto e Lane**—Novos Microdontinae Brasileiros (Syrphidae). [Rev. de Ent., Rio de Janeiro] 18: 139–48 (*). **Bourne and Shaw**—Chironomid larvae in a tobacco seed-bed. [37] 40: 749. **Callan, E. Mc.**—A note on Phlebotomus trinidadensis Newstead (Psychodidae). [Rev. de

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Reviews

A CATALOGUE OF INSECTICIDES AND FUNGICIDES. VOLUME I: CHEMICAL INSECTICIDES. By Donald E. H. Frear. Pp. xii–203, super roy. oct., Waltham, Mass. 1947: the Chronica Botanica Co.; New York City: Stechert-Hafner, Inc. Price, $6.50.

This is a compilation begun at the Pennsylvania Agricultural Experiment Station during the war as a part of the effort to discover new insecticides. In it are listed over 10,000 chemicals and miscellaneous insecticides that have been tested for the control of insects. Each substance is listed separately with its name, synonyms, and chemical formula. In addition, the insects against which it has been tested are given and the results of the tests as well as references to the literature listed in the author's index. Patents are also indicated and are listed numerically, by country and by patentee. To workers in insecticide research this volume will be a great convenience and save much laborious searching of the literature.—R. G. Schmieder.

BASIC BOTANY, An introduction to the science of botany. By Fred W. Emerson. Pp. ii–372, the Blakiston Co., Philadelphia and Toronto. Price, $4.00.

Entomologists usually have to have some acquaintance with plants even if only to be able to add the name of the host to the label on the pin. Many are led to deepen this acquaintance and soon find that each collecting trip then becomes a richer and more enjoyable experience and that even when the collecting is poor there is still much to enjoy and that no trip is ever a failure. When one comes to understand the plant life that is the insects home one will also come to know the insects themselves more completely—as living things rather than only as dried specimens. This text-book, intended for colleges, can be recommended for helping one to become really acquainted with plants. It considers plants primarily as living things and discusses their structures and specializations from this point of view. The result is something more appealing than the older dull and formal botany texts. The book is a departure in other ways, from the cover representing a landscape, in full color, and the double column page for economy and ease of reading, to the arrangement of the subject matter itself.—R. G. Schmieder.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Chrysididae—Wanted for determination in preparation of revision. Wm. G. Bodenstein, Galesville, Maryland.

Wanted—Ataenius and allied Aphodiinae from all parts of the world, especially Mexico, Central and South America. O. L. Cartwright, Clemson, S. C.

Wanted—Reprints and unpublished mss. on biological control of mosquitoes; for preparing annotated bibliographies for publication. J. B. Gerberich, Michigan State College, East Lansing, Mich.

Wanted—Hesperid genus Megathymus for exchange or purchase. P. S. Remington, 5570 Etzel Ave., St. Louis 12, Missouri.

Wanted—Psychodidae of North America for revisional purposes. Wm. F. Rapp, Jr., 203 Harker Hall, Urbana, Ill.

Diptera—Tachinidae-Dexiidae wanted, No. Amer. and exotic. Will collect most orders in exchange or will purchase. P. H. Arnaud, 60 Woodrow St., Redwood City, Calif.

Will collect—Zoological and entomological specimens in tropical and subtropical parts of Peru. Jose M. Schunke, Pucallpa, Peru.

Wanted—Diplotaxis; will buy or exchange. E. W. Mange, 307 W. Walnut St., Hanover, Pa.

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Mallophaga (on which immediate determination is not necessary) wanted for study and determination. R. L. Edwards, Dept. Biology, Harvard University, Cambridge 38, Mass.

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